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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/462,506	05/03/2000	IAN CHRISTISON SAYERS	W1100/20011	5168

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EXAMINER

PADGETT, MARIANNE L

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/462,506

Applicant(s)

Ian Sayers

Examiner

M.L. Padgett

Group/Art Unit

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— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 8/8/03 + 7/3/03
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 12 - 21 + 26 is/are pending in the application.
- ☐ Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 12 - 21 + 26 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____
- ☐ Copies of the certified copies of the priority documents have been received
- in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

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1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/3/03 has been entered.

2. Claims 12-21 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

While previous 112 problems discussed have been corrected either through amendment or explanation, in the last line of claims 12 a new ambiguity has been added, since "ambient" is a term that is defined variously by different people and the examiner found ambient used on line 2 of page 6, used in a sense that could mean atmospheric or anything outside the chamber, but not a definition. Therefore the phrase "a pressure above ambient" could be read as to mean, for example, above atmospheric pressure, or to mean above the pressure of other pressures that may be found somewhere else near or around it, which could be subatmospheric, etc.

3. Claims 12-21 and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. As the amendment to the claim "...having a pressure above ambient" does not appear to have clear support in the original specification for its scope, it must be considered to include New Matter. It is noted that lines 2-3 of p.5 of the specification teach use of "operating

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pressure of the plasma chamber..." to include "above 1 atmosphere", so that possible meaning of the phase is covered. In the paragraph bridging p. 4-5 of the response, applicant alleges that "in the preferred embodiment, the plasma treatment ...has a very slight over pressure within the unit" (emphasis added). The examiner found this embodiment starting on line 8 of page 5, where the paragraph bridging p. 5-6 teaches just the opposite, stating "the plasma usually operates at a considerable under -pressure, often extremely rarified, e.g. 0.1-3.0 mbar; and sometimes contains component which must not be allowed into the ambient" (emphasis added). As the possible scope of the amended claims, is broader than the scope of the original disclosure, and the preferred embodiment cited by applicant as support does not supply it, this claim appears to contain New Matter. Note 1 bar = 1.02 atm, so 0.1-3.0 mbar (millibar) used in the cited embodiment are well under atmospheric.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 12-21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reiner et al, discussed previously in section 10 of paper # 9 (mailed 4/24/02) and section 7 of paper # 13 (mailed 3/31/03).

With respect to the amendments, it is noted that Reiner et al explicitly treat using gases, such as Ar and He (the preferred noble gases), as well as these mixed with other gases, previously discussed. With respect to the uncertain pressure limitation, note in col. 6, that Reiner et al disclose that various types of plasmas are all usable for their treatment process, where the disclosed corona plasma, also known as corona discharge treatment, would appear to be equivalent to applicant's "dielectric barrier discharge" of claim 13. The corona plasma is taught for pressures of 100 Pa to 100,000 Pa, i.e. up to $10^5 \text{ Pa} = 1.02 \text{ atm}$, thus about or just about atmospheric, a possible meaning of the amended claims, especially as above atmospheric need not be significantly above and may occur easily as gases are being input to the chamber.

In col. 4, of Reiner et al, it is discussed that the treatment contemplated for fabrics (non-woven, spun, knitted, etc.) can be continuous treatments for sheets of material (col. 4, lines 28-50) or discontinuous for discrete substrate samples, thus Reiner et al covers all the changes to the claim and its rejected is maintained.

6. Claims 12-15, 18 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milding et al, previously discussed in section 8 of paper # 13, and sections 11-12 of paper # 9.

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Like Reiner, Milding et al teach alternate type of plasmas, including both glow discharge, where theirs are at reduced pressure, or corona at atmospheric pressure (abstract; page 7-8), where either may use mixtures inclusive of O₂, N₂, Ar, He, NH₄, CF₄, and organic unsaturated gases, with continuous feed of material to the plasma being taught.

Milding et al has no explicit teaching of above atmospheric (? ambient ?), but it would have been obvious to one of ordinary skill in the art, that as actual atmospheric pressure itself is variable, any pressure relatively near, i.e. a little above is included, would have been expected to be useful, as long as one maintained the pressure one is using in order to produce consistent and repeatable results, and because slight variations in pressure are in the scope of normal optimization of plasma processing.

7. Claims 12-21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reiner et al as applied to claims 12-21 and 26 above, and further in view of Kusano et al.

Only Reiner et al's corona plasma is about atmospheric pressure, but from the teaching of Kusano et al (discussed insertion 4 paper #13 and section 7, paper #9), one of ordinary skill in the art would have known that glow discharge plasmas may also use atmospheric pressure for gas as taught by Reiner et al, to treat analogous substrates, hence it would have been obvious to such a person to employ the specific type of glow discharge plasma of Kusano et al, in Reiner et al, for the advantages of the improved treatment provide thereby, and because Reiner et al is not limited by type of plasma and teach analogous ones, and also teach batch and continuous plasma as alternative for any of the types, thus motivating the use of a continuous plasma of Kusano et al's type, thus maturing the of a continuous plasma of Kusano et al's type to achieve bulk treatment of the fabric sample treated in Kusano et al, in order to increase efficiency.

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8. Claims 12-21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reiner et al or Milding et al, optionally in view of Kusano et al, as applied above, and further in view of Jeffery et al.

While the intended use of the fabrics treated in the claims does not have any positive limitation on the process, it is noted that the above references do not discuss paper machine fabric or filtration fabric *per se*. However, Jeffery et al (page 2) do discuss such materials, and that they are advantageous plasma treated by analogous processing, hence one of ordinary skill would have been further motivated to treat fabrics as taught for use in Jeffery et al, in the process as discussed above, because all the references teach similar fabrics and plasmas with the desirability for these specific end uses demonstrated.

9. Any inquiry concerning this communication should be directed to Marianne L. Padgett at telephone number (571) 272-1425 on M-F from about 8:30 am - 4:30 pm, & FAX#(703) 872-9306 (all official).

M. L. Padgett/af

March 1, 2004

A handwritten signature in black ink, appearing to read "Marianne Padgett", written in a cursive style.

**MARIANNE PADGETT
PRIMARY EXAMINER**